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**SPRINGFIELD
ARMORY**

SPRINGFIELD, MASSACHUSETTS

RESEARCH AND ENGINEERING

ENGINEERING BRANCH
BROCHURE

6 Engineering Development and Operational Characteristics
of Rifle, 7.62mm, M14E2

18 December 1963

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I. INTRODUCTION

A. Scope

is presented
This brochure is published to provide current information on the design characteristics of Rifle, 7.62mm, M14E2.

B. Engineering Development of Rifle, 7.62mm, M14E2

1. Rifle, 7.62mm, M14 and Rifle, 7.62mm, M15 were classified standard on 23 May 1957. The M15 Rifle was the heavy barrel model of the M14 Rifle intended to be used for automatic fire. Tests by the Army and the Marine Corps led to the adoption of the M14 Rifle with the M2 Bipod and to the obsolescence of the M15 Rifle on 17 December 1959.

2. The User was dissatisfied with the automatic fire accuracy of the M14 Rifle with the M2 Bipod and, in early 1962, the United States Army Infantry Board (USAIB), Fort Benning, Georgia, with the assistance of the Army Marksmanship Unit fabricated and tested a modified M14 Rifle which became known unofficially as the M14 (USAIB) Rifle.

3. The M14 (USAIB) Rifle demonstrated that the automatic fire accuracy requirements (i.e., 80 per cent of the shots must fall within a 40-inch diameter circle at a range of 200 meters when fired in 2- to 3-round bursts) could be met consistently with this configuration. More M14 (USAIB) Rifles were fabricated and tested extensively.

4. Headquarters, U. S. Army Weapons Command instructed the Armory on 7 August 1963 to prepare a technical data package for manufacture of the M14 (USAIB) Rifle and to adhere to the original configuration to the greatest extent practicable. Since there were no drawings or design data for the M14 (USAIB) Rifle, the Armory analyzed the USAIB and

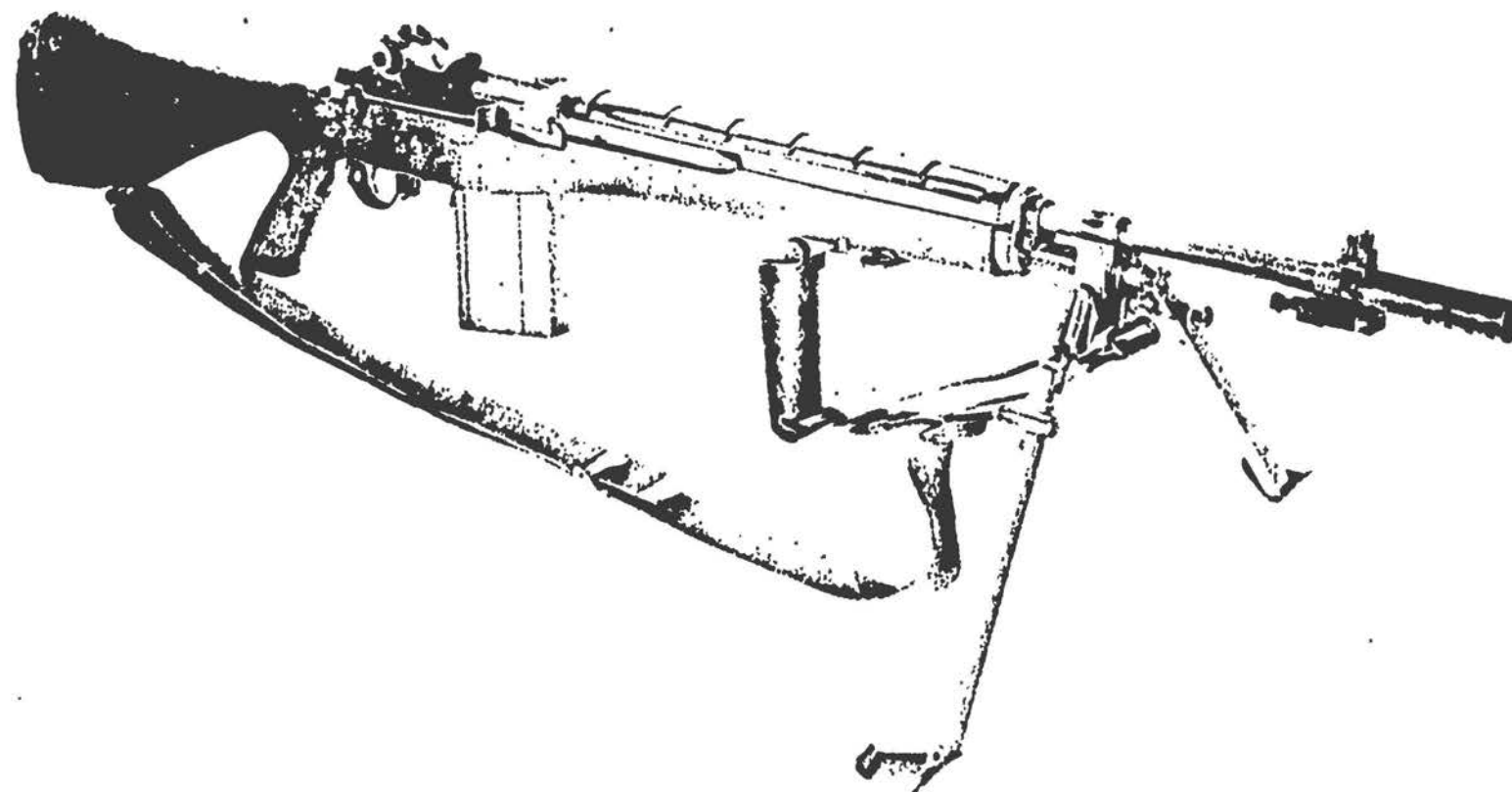
prepared preliminary design data and sketches. These sketches and data provided the basis for the engineering of a comparable design which would meet not only the operational requirements but also the quantity production requirements. This technical data package was completed 1 October 1963.

5. On 2 October 1963, Headquarters, U. S. Army Weapons Command, instructed the Armory to completely redesign the front handgrip so that it would fold to the rear, present a small silhouette in the closed position, and provide greater comfort when the weapon is carried at sling arms. The Armory was instructed that this handgrip should also be adjustable longitudinally to accommodate the gunner's arm length. In addition, a butt swivel should be provided which would pivot to the left side of the stock to permit side slinging of the weapon. The Armory was also requested to fabricate four rifles for confirmation of design and testing.

6. The handgrip assembly, stock assembly, and sling were redesigned and product-engineered, and four rifles were fabricated and tested by the Armory. On 29 October 1963, the design was confirmed by higher authority, and four weapons were shipped to the test agencies on 4 November 1963.

7. The new weapon was designated Rifle, 7.62mm, M14E2 (Photograph 1014).

8. Listed below, are the significant differences between the M14 (USAIB) and the M14E2 Rifles resulting from redesign to meet requirements and engineering for quantity production.



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RIFLE, 7.62mm, M14 E2

8 Nov 63

a. The stock for the M14 (USAIB) was fabricated from several pieces of wood cemented together to meet the new configuration of the butt end and the new rear handgrip. The front end of the stock was identical with the standard M14 Rifle except for two holes to permit mounting of the front handgrip. The M14E2 stock is fabricated from the standard stock blank except for the rear handgrip which is doweled and cemented in place. The front end and the sides of the stock have been strengthened to withstand heat and stresses of automatic fire. The butt end of the stock and the rear handgrip have been reshaped to provide greater accuracy and comfort in firing.

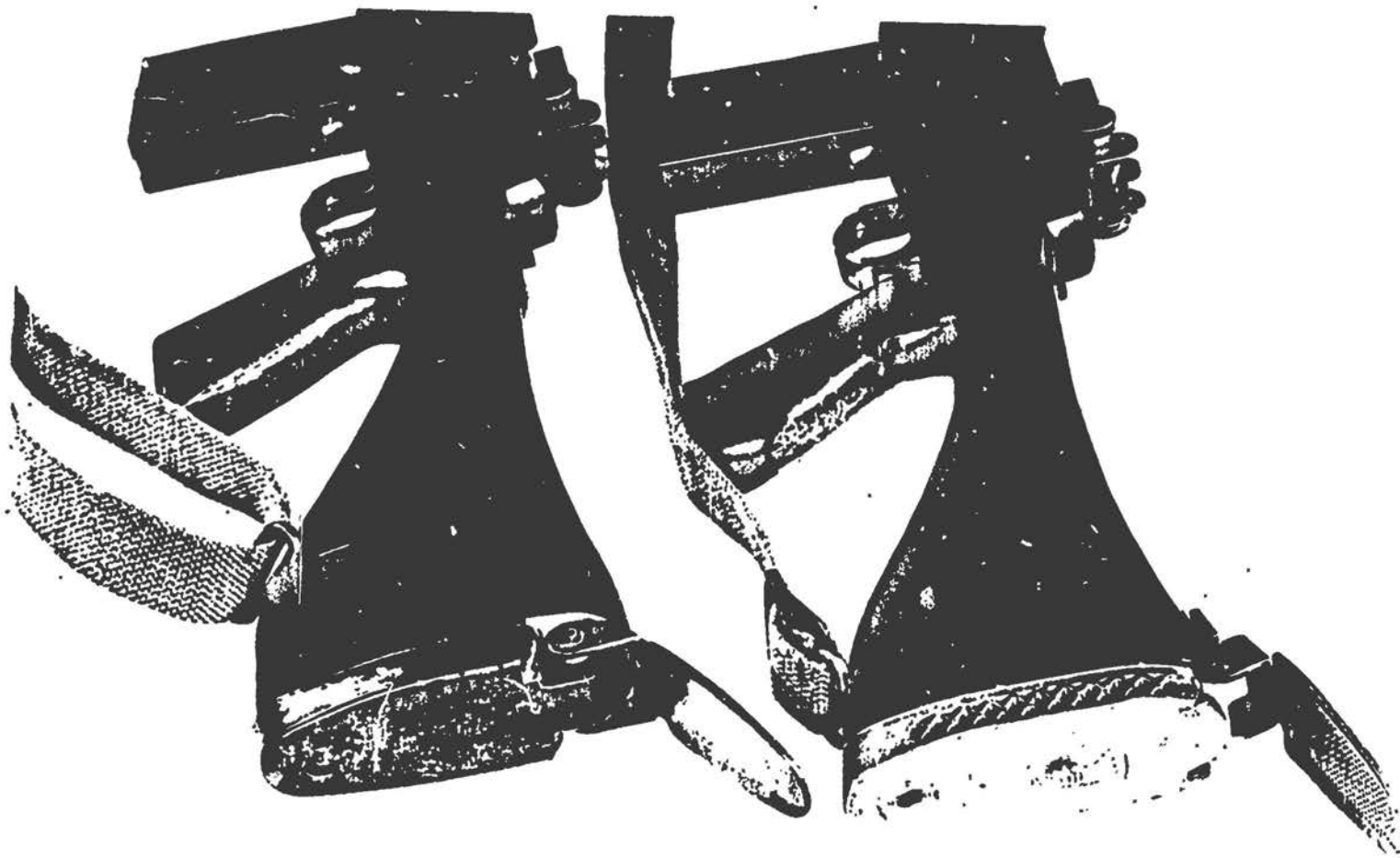
b. The recoil pad for the M14 (USAIB) was of commercial design and manufacture which had to be modified to accommodate the shoulder rest and individually fitted to the stocks. The pad had open ribbing on the sides which allowed foreign matter to accumulate, and the rubber had poor resistance to oil, abrasion, and cold-cracking which resulted in a high replacement factor. The M14E2 recoil pad is molded from rubber with excellent resistance to oil, abrasion, and cold-cracking. There are no exposed cavities to accumulate foreign matter. The pad has an integral steel shoe for strength and for tight fit with the stock; the pad is interchangeable from rifle to rifle.

c. The shoulder rest assembly for the M14 (USAIB) Rifle consisted of the standard M14 Rifle shoulder rest plate mounted on a block and a stop plate screwed to the top of the block. This stop plate projected above the top and the side surfaces of the stock. A detent was provided to hold the rest in the open or closed position. The

shoulder rest assembly for the M14E2 is a completely new design with only one moving part, the shoulder rest plate. This design provides detent action for both the open and the closed positions and eliminates projections beyond the contour of the stock (Photograph 1166).

d. The muzzle stabilizer for the M14 (USAIB) consisted of a perforated steel sleeve welded to the flash suppressor. Replacement of the flash suppressor with the muzzle stabilizer was required when the M14 Rifle was converted to the M14 (USAIB) configuration. The stabilizer for the M14E2 is a separate unit which fits over the flash suppressor and is fastened to the bayonet lug. The rifle combination tool is used for assembly and disassembly (Photographs 1015, 752).

e. The front handgrip assembly for the M14 (USAIB) was made of wood, folded forward only, and was not adjustable longitudinally. The silhouette of the handgrip in the folded position was high and awkward. The handgrip was held in the closed position by friction. The handgrip assembly for the M14E2 is a completely new design incorporating all the features requested by higher authority. The handgrip folds to the rear and fits close to the stock in the closed position to provide a low silhouette and greater comfort for carrying the weapon at sling arms. The handgrip assembly can be moved five inches longitudinally to accommodate the gunner's arm length. The handgrip is made of aluminum and is rubber-coated to insulate against heat or cold. The handgrip assembly incorporates a positive stop in the open position against the rearward pull of the gunner and has detent action to hold it in the closed position. The latch mechanism in the handgrip is large and can be operated with winter mittens (Photograph 1165).

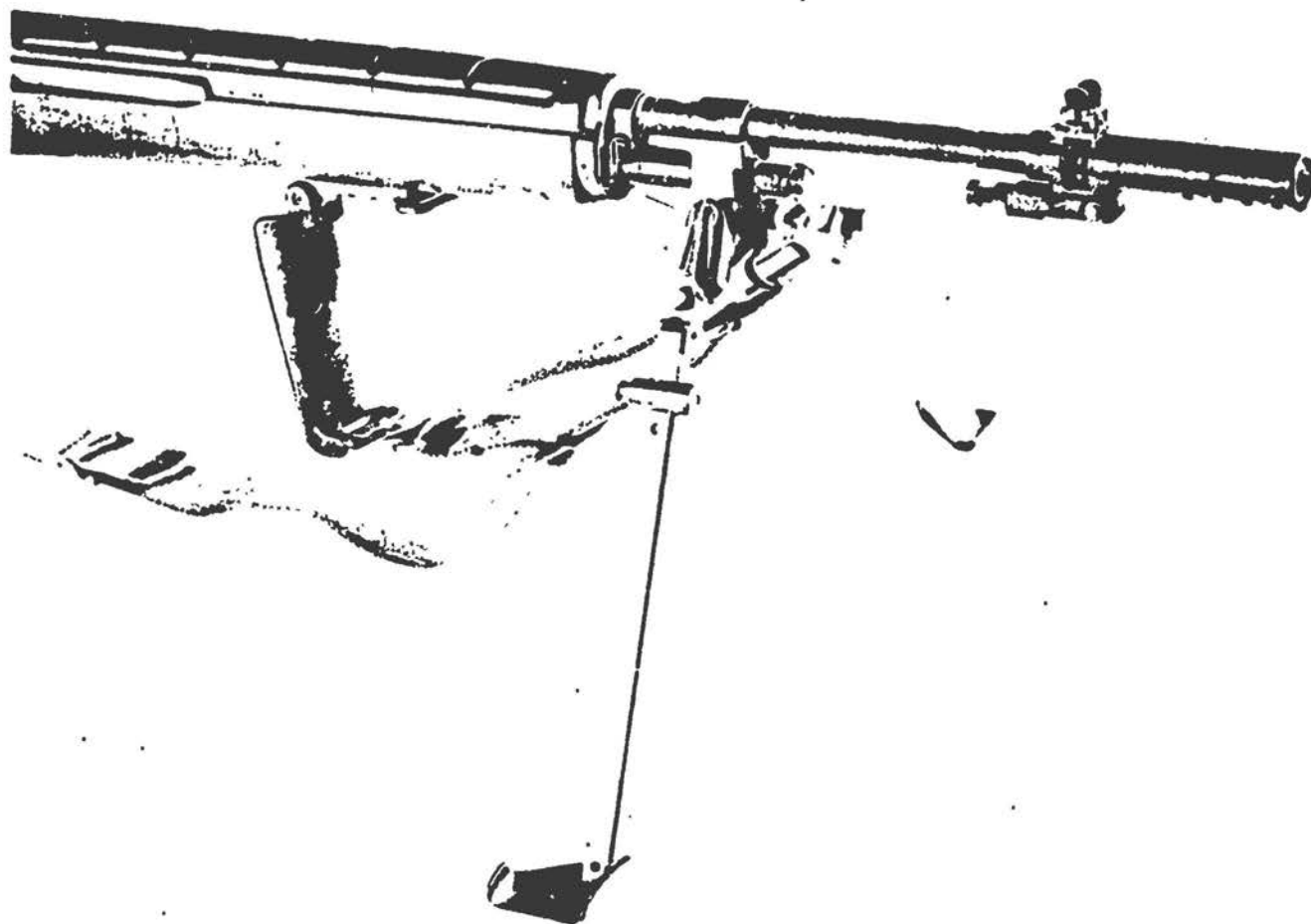


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RIFLE, 7.62mm, M14E2.(left)
RIFLE, 7.62mm, M14 (USAIB) (Right)
Recoil Pads and Shoulder Rests

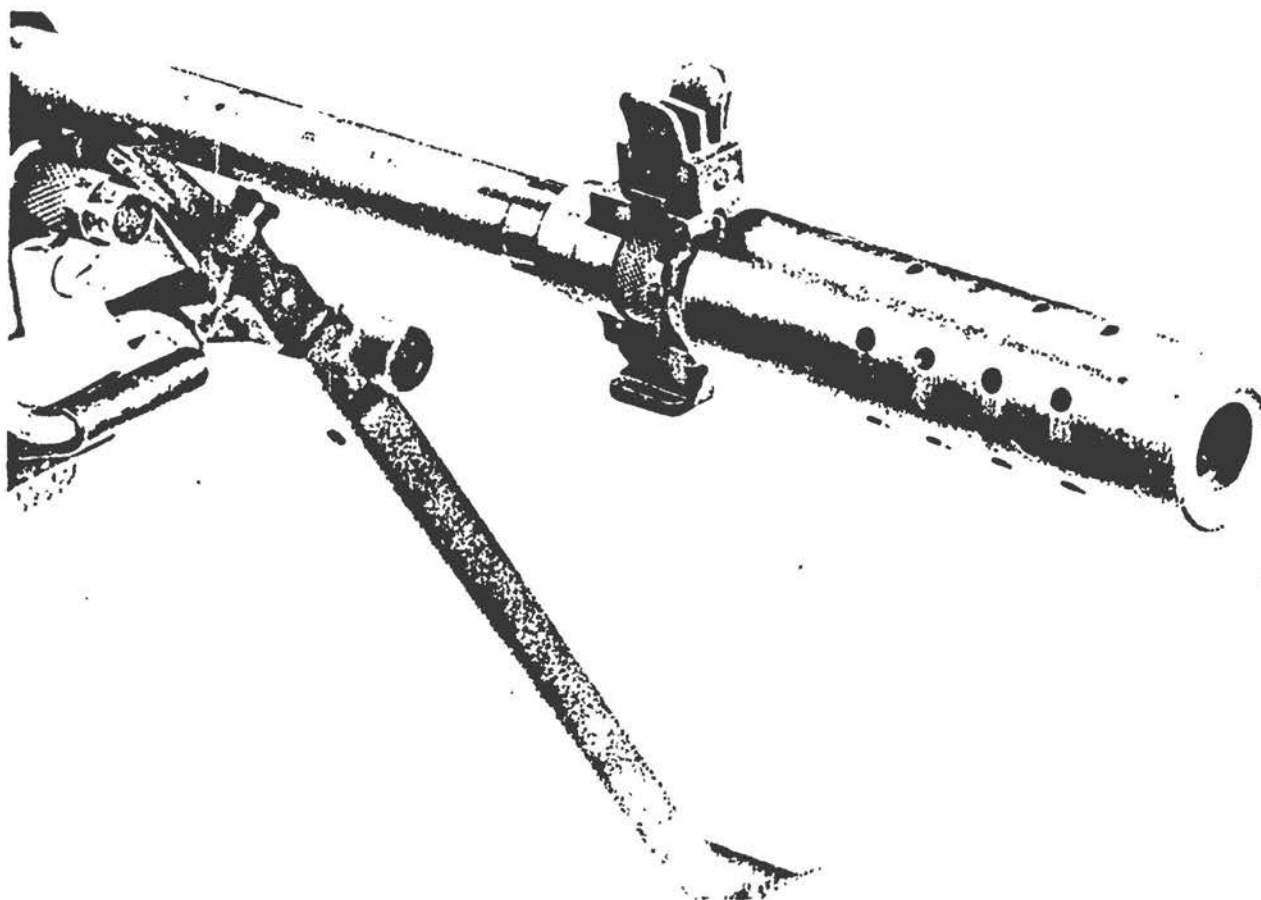


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RIFLE, 7.62mm, M14 E2

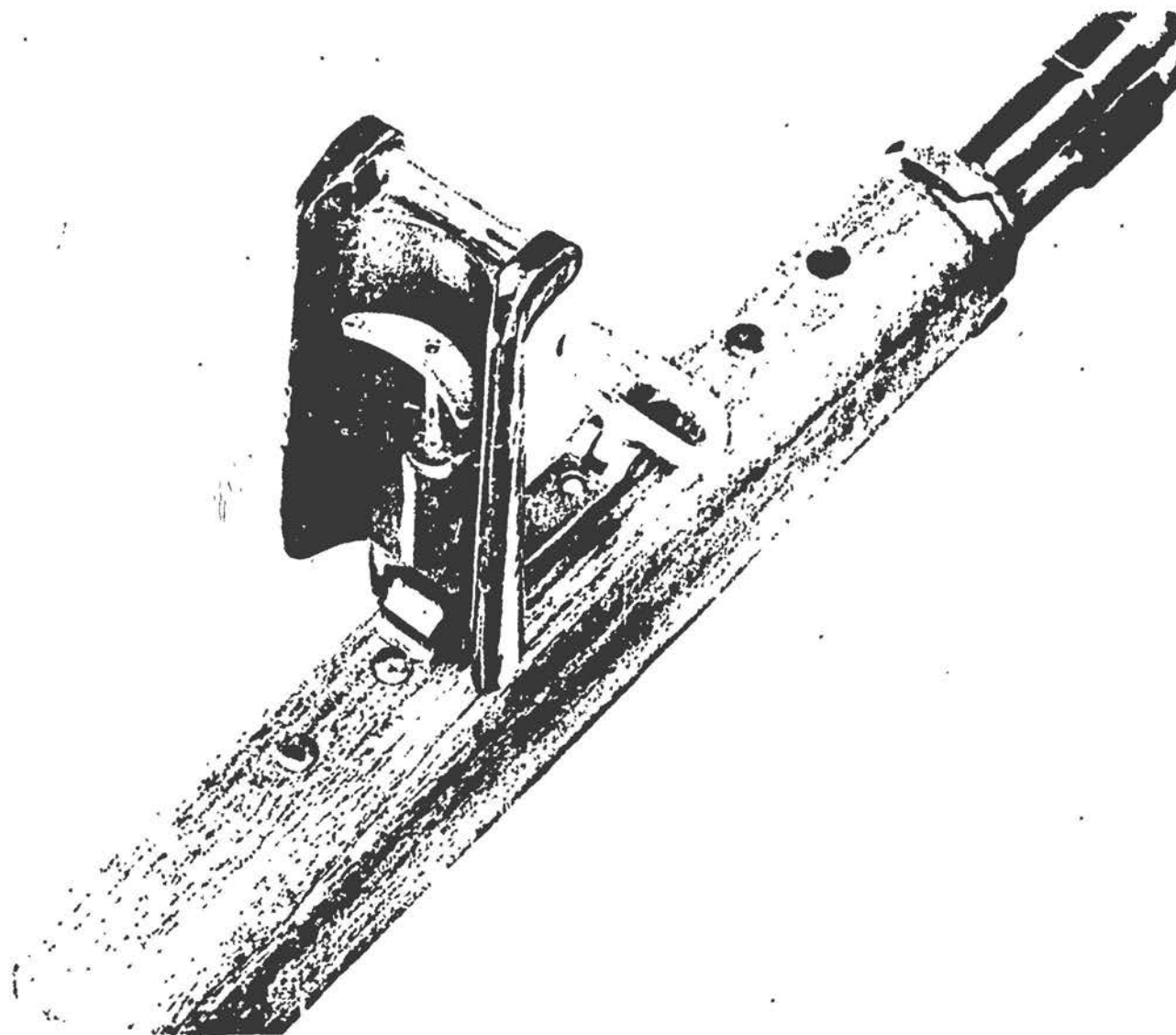


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26 June 1962

RIFLE, 7.62mm, M14 (USAIB)
Muzzle Stabilizer



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RIFLE, 7.62mm, M14E2
Handgrip Assembly

f. The sling used for the M14 (USAIB) was the standard M1-M14 Rifle sling and was too short to carry the rifle at sling arms. The sling used for the M14E2 is 20 inches longer and has an extra hook assembly to permit the sling to be connected and disconnected quickly from the handgrip and bipod (Photographs 1167, 1168).

g. The butt swivel on the M14 (USAIB) was stationary as on the M1 and M14 Rifles. The butt swivel on the M14E2 pivots 90 degrees to the left side of the stock to permit side slinging of the weapon (Photograph 1016).

C. General Data

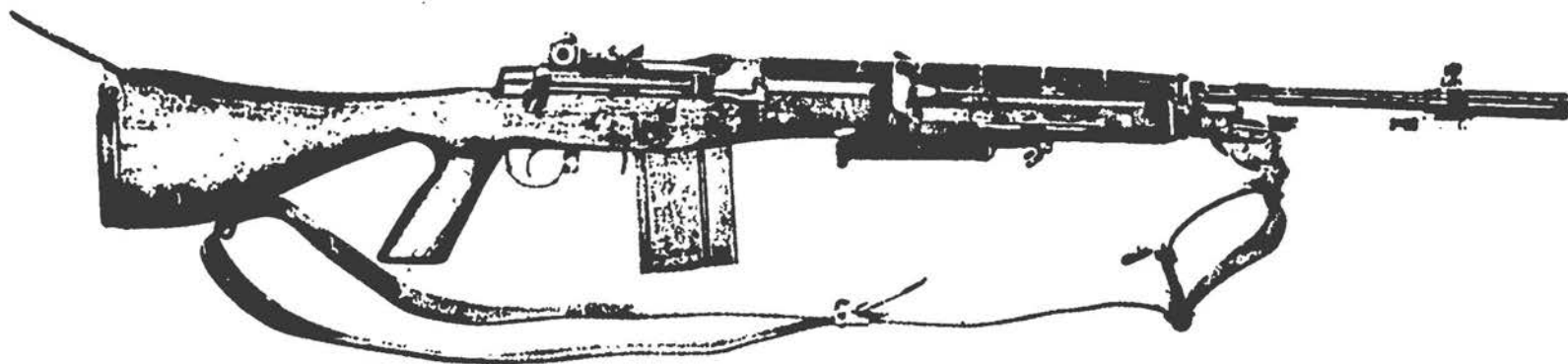
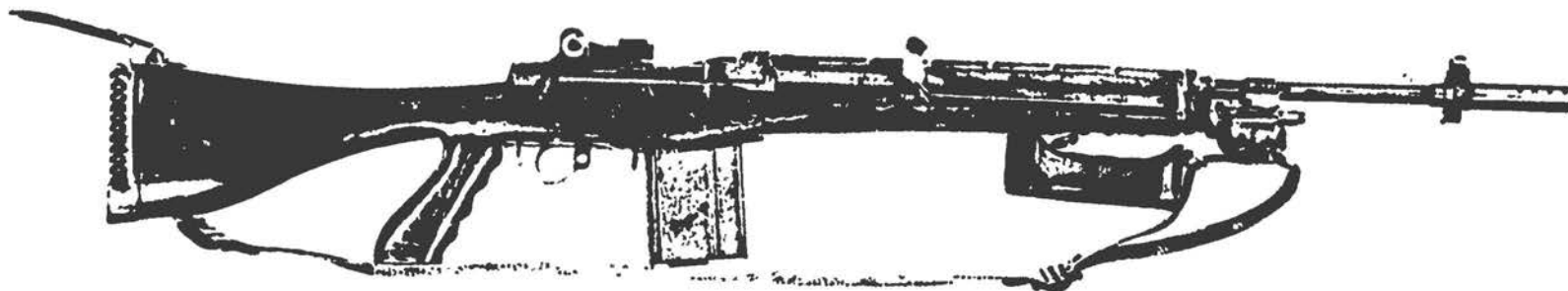
1. The M14E2 Rifle differs slightly from the standard M14 Rifle and is designed to deliver accurate automatic fire in the role of the Infantry Squad automatic rifle. The standard M14 Rifle is used primarily to deliver accurate semiautomatic fire by the Infantry Squad.

2. Both models are 7.62mm, magazine-fed, gas-operated, shoulder type weapons, and both use the same sight system.

3. The M14E2 Rifle incorporates a "straight line" stock assembly, muzzle stabilizer, modified M2 bipod, and a long sling. The barrel and receiver group, and the firing mechanism are the same rugged, reliable, M14 Rifle mechanisms and are completely interchangeable between the two weapons.

D. Physical Characteristics of Rifle 7.62mm, M14E2

Weight of weapon, complete with empty magazine	12 lb, 12 oz approx.
Weight of weapon, complete with full magazine	13 lb, 12 oz approx.
Length of weapon, overall	44.3 in.
Ammunition	7.62mm NATO
Muzzle Velocity	2800 FPS avg.

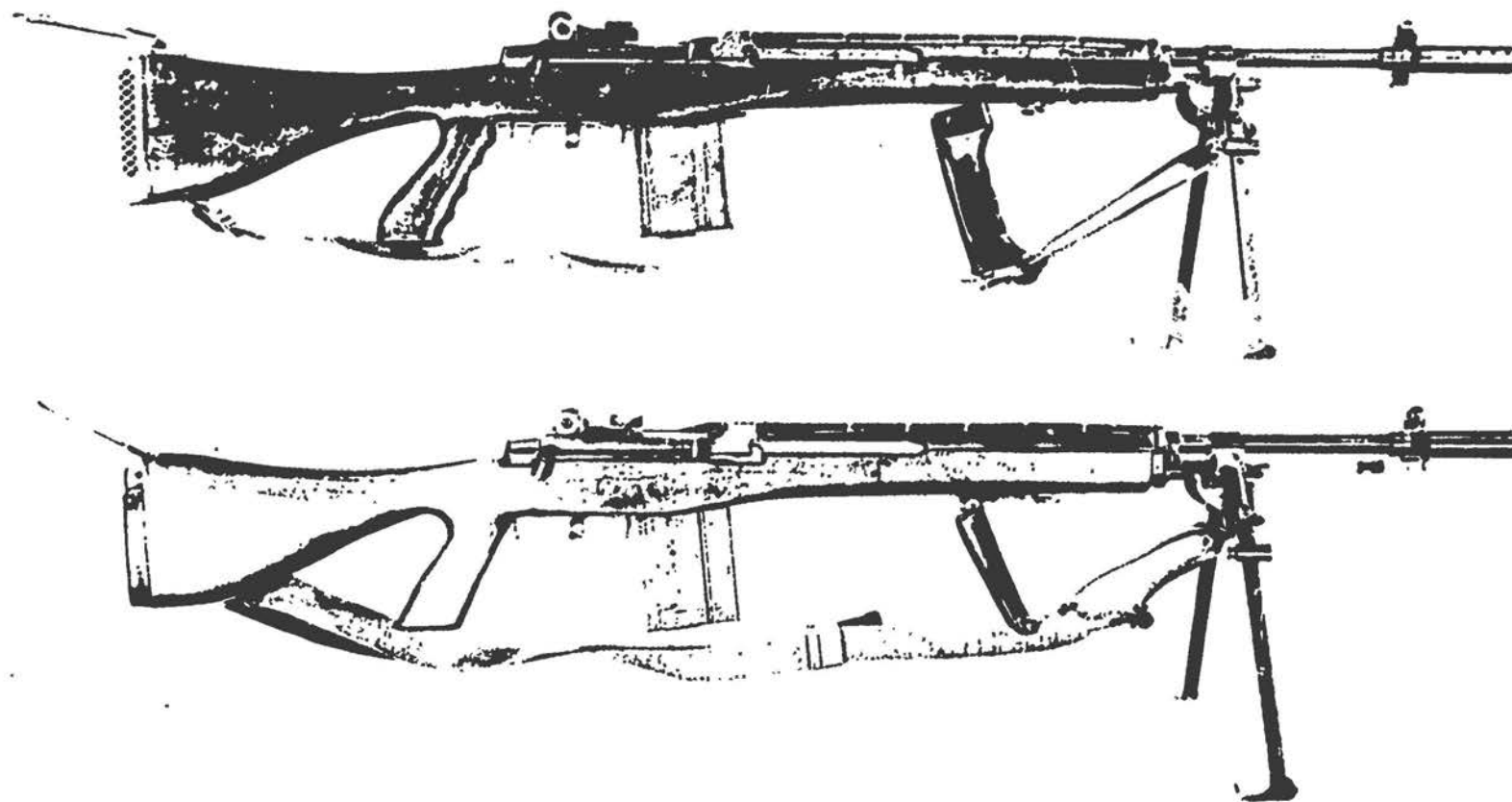


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RIFLE, 7.62mm, M14 (USAIB) (Top)
RIFLE, 7.62mm, M14E2 (Bottom)



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RIFLE, 7.62mm, M14 (USAIB) (Top)
RIFLE, 7.62mm, M14E2 (Bottom)



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U. S. ARMY - SPRINGFIELD ARMORY

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RIFLE, 7.62mm, M14 E2

II. GENERAL DESCRIPTION

A. Stock Assembly

1. The stock assembly of the M14E2 Rifle is of the "straight line" type with a fixed rear pistol grip and a folding front handgrip which lies flat along the bottom of the stock when not in use. The location of the handgrip assembly can be adjusted longitudinally for five inches in one-inch increments to accommodate all gunners. The handgrip assembly also has a sling swivel for use when the bipod is removed from the weapons (Photograph 1013).

2. The stock assembly also incorporates a rubber recoil pad to reduce fatigue resulting from continuous automatic fire. The folding shoulder rest provides vertical control of the butt end of the rifle and is especially useful when the weapon is fired from the prone position.

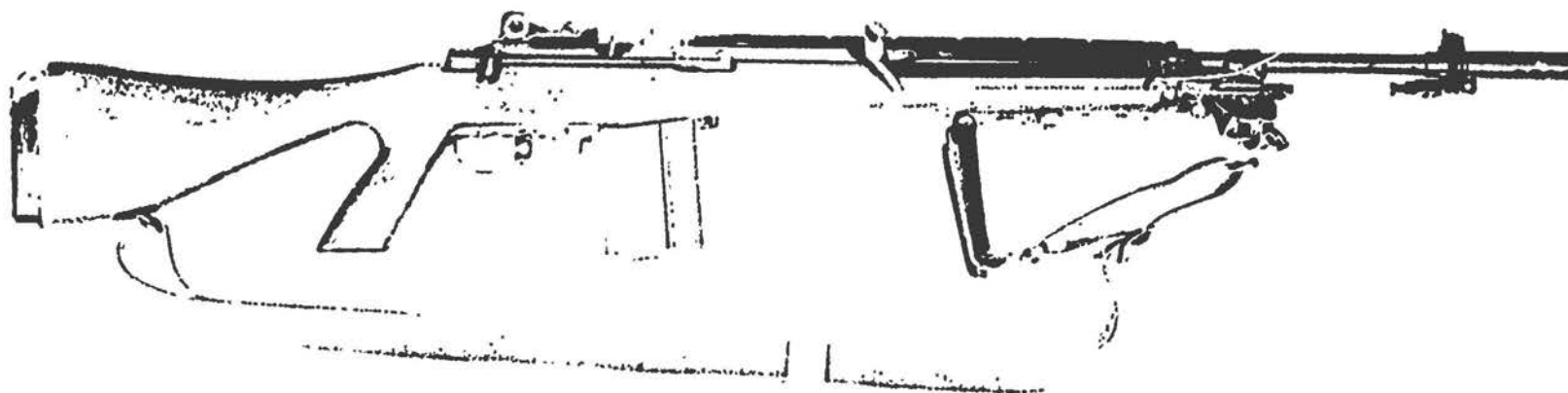
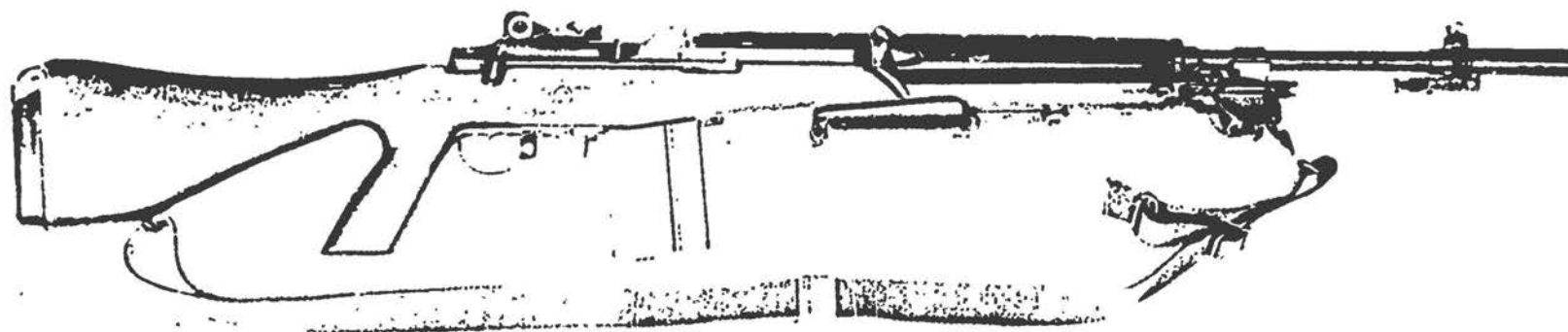
3. The butt swivel pivots 90 degrees to the left side of the stock and allows the weapon to be side slung for carrying.

B. Muzzle Stabilizer

The muzzle stabilizer slides over the flash suppressor and is fastened to the suppressor by a screw and a lock nut. The rifle combination tool is used to tighten the screw and the nut. The stabilizer provides muzzle compensation, recoil-braking, and flash suppression. It is compensated for right-handed gunners.

C. Bipod, M2 (Modified)

The M2 bipod is modified by the addition of a sling swivel and a longer pivot pin in lieu of the current pivot pin to accommodate the



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RIFLE, 7.62mm, M14 E2

swivel. The swivel provides the mounting point for the sling for both firing and carrying.

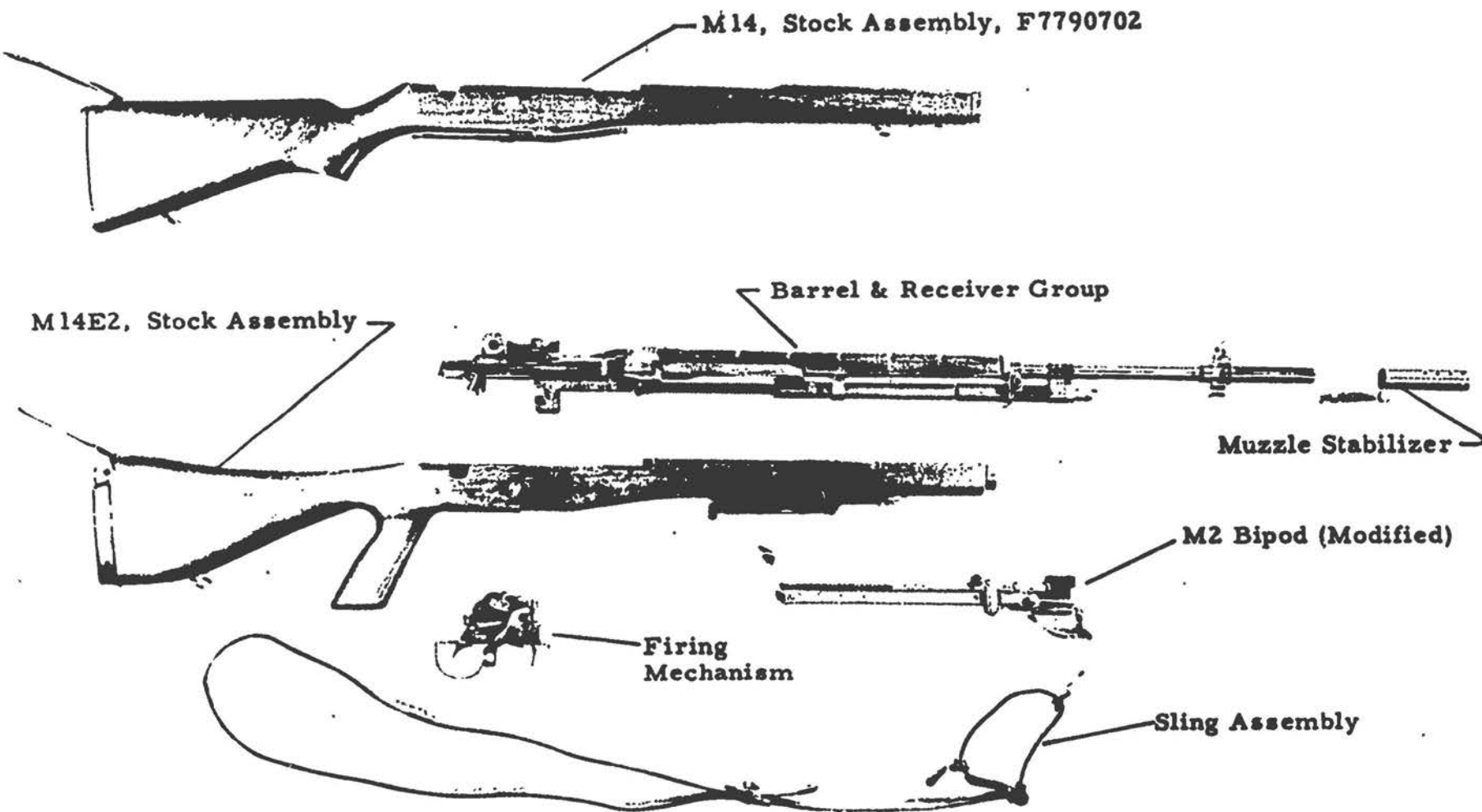
D. Sling, Gun

The sling used on the M14E2 is the long Browning Automatic Rifle sling with an extra hook assembly. The portion of the sling between the handgrip and the bipod provides additional muzzle control when the weapon is fired. When the weapon is carried, the sling is disconnected from the handgrip assembly.

III. CONVERSION OF M14 RIFLE TO M14E2 RIFLE

A. The conversion of the standard M14 Rifle to the M14E2 configuration is accomplished in the following manner:

1. Break the M14 Rifle down into the three main groups, i.e., the barrel and receiver group, the firing mechanism, and the stock assembly.
2. Replace the M14 Stock Assembly, F7790702, with M14E2 Stock Assembly, F7791671 (Photograph 1159).
3. Reassemble the three main groups.
4. Slide the muzzle stabilizer over the flash suppressor, swing the yoke over the bayonet lug, and tighten the screw with the combination tool. Slide the combination tool over the head of the screw and tighten the nut securely.
5. Modify the M2 bipod by removing the cotter pin from pivot pin in the head assembly. Hold the jaws in place with fingers, and remove pivot pin, B7791104. Insert pivot pin, B7791669, into swivel, C7791670, so that the loop of the swivel projects forward of the head of the pivot pin. Insert the pivot pin into the bipod head and through the jaws, and reassemble the cotter pin to the pivot pin.
6. Assemble the modified bipod to the rifle gas cylinder, and tighten with the rifle combination tool.
7. Attach the sling hook assemblies to the bipod swivel and to the handgrip pin, pass the trailing end of the sling through the butt swivel and back through the keeper assembly.



B. If the standard M14 Rifle is equipped with a selector lock, installation of the selector and the selector spring should be accomplished by the company armorer or ordnance personnel.

IV. ADJUSTMENT OF SLING FOR FIRING

Proper adjustment of the portion of the sling between the handgrip and the bipod swivel is necessary to achieve maximum accuracy of automatic fire. The sling should be adjusted so that the portion between the handgrip and the bipod is taut when the handgrip is pulled rearward against the stop position. This should be accomplished without undue strain on the gunner. This adjustment will maintain proper tension in the sling section when the weapon is being fired and will minimize variation in the size of the shot group.

V. DETAILED DESCRIPTION

A. Stock

1. The stock is fabricated from two separate pieces of walnut wood. The body of the stock is made from the standard M14 Rifle stock blank. The pistol grip is fabricated from a separate piece of walnut with the grain perpendicular to the longitudinal axis of the stock. The pistol grip is doweled and cemented in place.

2. The cross-sectional area of the forward end of the stock is greater than that of the M14 Rifle stock to enable it to withstand the stresses applied by the front handgrip and the high heat generated by automatic fire.

B. Front Handgrip Assembly

1. The handgrip body is fabricated from aluminum, either a forging or a casting, and is coated with rubber to provide insulation against heat or cold. The handgrip is attached to a steel mounting block which is, in turn, fastened to the stock by means of two screws.

2. The handgrip has a spring-loaded latch mechanism which holds the handgrip in the closed position and which acts as a positive stop in the open position against the pull of the gunner. When the latch (located in the back of the handgrip) is pulled down, the stop pin is pulled clear of the block. This operation permits rotation of the handgrip to the closed position.

3. The handgrip is moved to the open position when the rearmost end of the handgrip is pushed down. The latch will disengage automatically.

4. The six mounting holes in the bottom of the stock provide five inches of longitudinal adjustment for the handgrip. The four holes which are not used are plugged with rubber grommets to prevent foreign matter from entering the action. The mounting screws are used with two washers, one is a lock washer and the other is a plain washer which provides a bearing surface between the wood and the lock washer. The forwardmost hole in the stock is the water drain hole and is not used for adjustment of the handgrip (Photograph 1170).

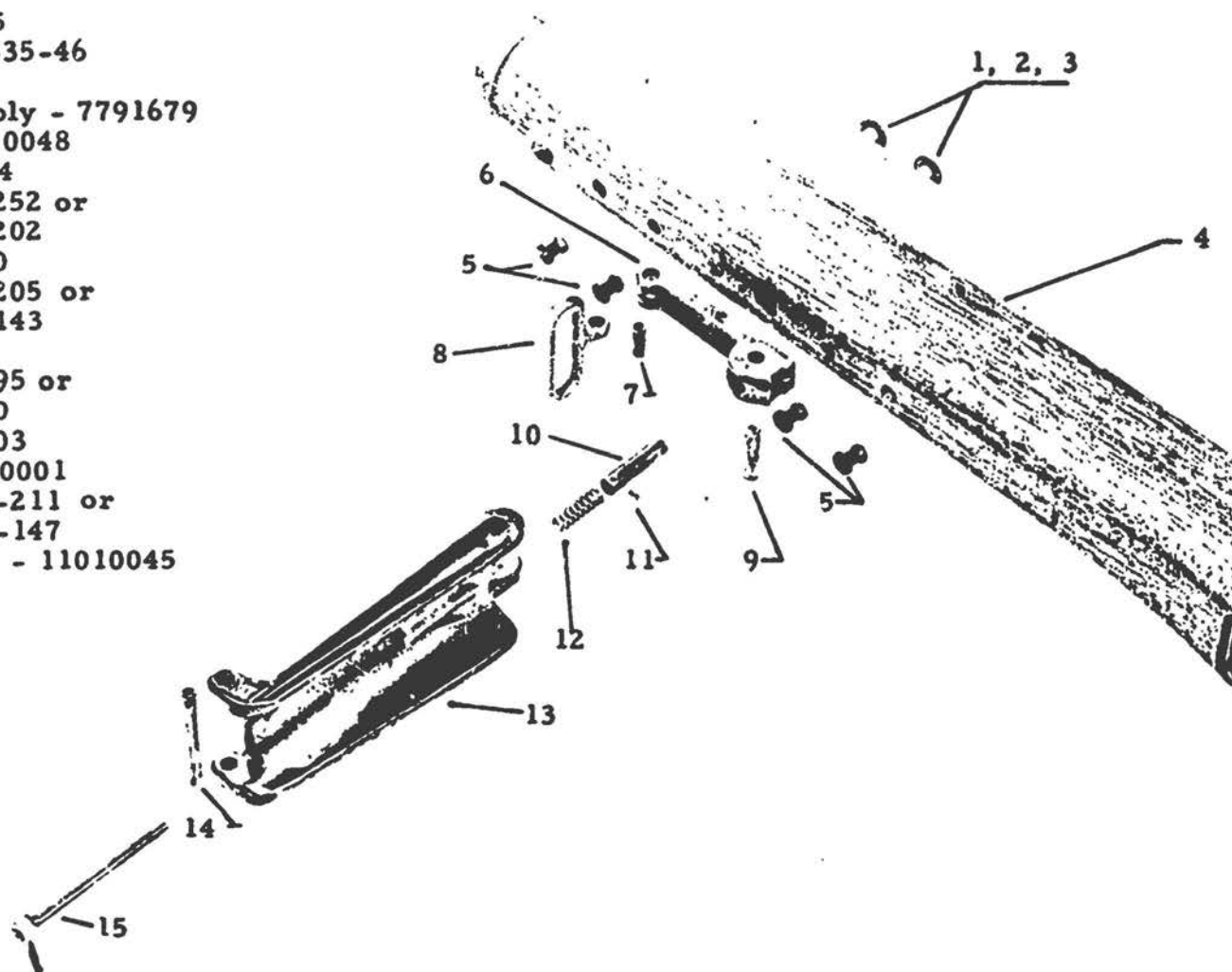
C. Shoulder Rest Assembly

The mounting bracket for the shoulder rest is made of aluminum and is attached to the stock by two wood screws which are concealed by the recoil pad. The mounting bracket has a steel pin which engages four depressions in the shoulder rest-ears. This provides detent action to hold the shoulder rest in the open or closed positions. The ears of the shoulder rest act as a spring and provide constant tension against the steel pin.

D. Recoil Pad

The recoil pad is made of rubber with excellent resistance to oil, wear, and cold-cracking and is interchangeable from rifle to rifle. The pad is fastened to the stock by two screws, and the screw holes in the pad are filled with rubber plugs after assembly to prevent snow and ice or other foreign matter from accumulating in the holes. The plugs can be removed from the pad by slipping a screw driver blade or similar flat instrument between the plug and the pad and gently prying the plug out of the hole (Photograph 1171).

1. Screw - 7791675
2. Washer - MS35335-46
3. Burr - 7790474
4. Stock Subassembly - 7791679
5. Grommet - 11010048
6. Block - 11010004
7. Pin - MS51923-252 or MS39086-202
8. Swivel - 6008890
9. Pin - MS39086-205 or MS16562-143
10. Pin - 11010002
11. Pin - MS16562-95 or MS3908-50
12. Spring - 11010003
13. Handgrip - 11010001
14. Pin - MS39086-211 or MS16562-147
15. Latch Assembly - 11010045

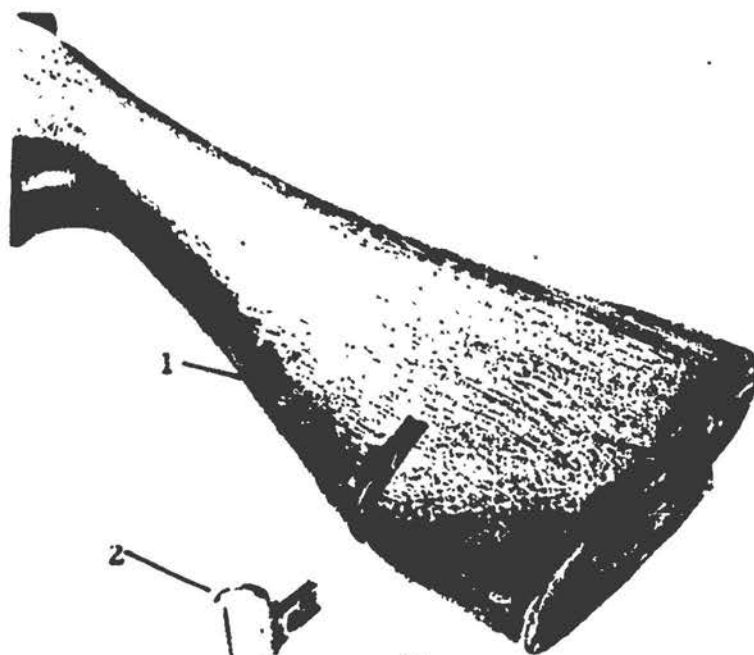


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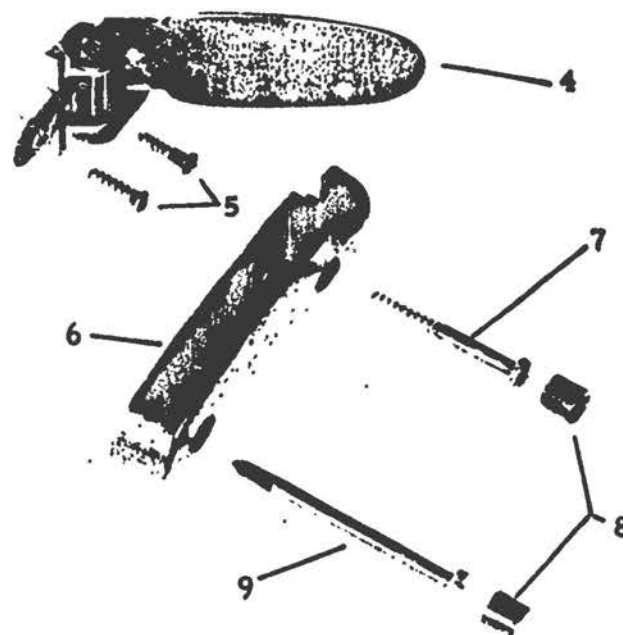
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RIFLE, 7.62mm, M14E2
Disassembled Handgrip Assembly



01264

1. Stock Subassembly - 7791679
2. Swivel - 11010046
3. Bushing - 11010047
4. Rest Assembly - 7791678
5. Screw - 6146873
6. Pad - 7791673
7. Screw - 7791677
8. Plug - 7791674
9. Screw - 7791676



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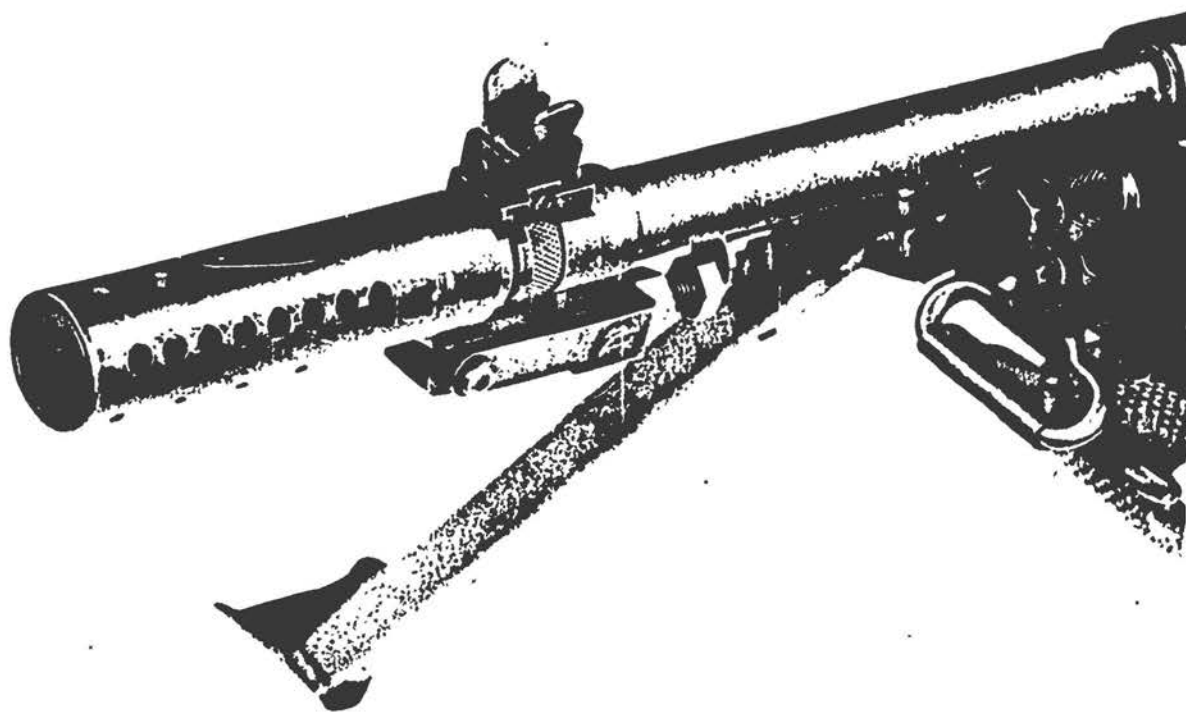
RIFLE, 7.62mm, M14 E2
Disassembled Butt End

E. Butt Swivel

The butt swivel fits over a threaded bushing through which the lower recoil pad screw is threaded. The screw draws the bushing against the stock and provides a bearing surface on which the swivel pivots. The bushing is prevented from turning when the screw is assembled or disassembled by pulling down, gently, on the swivel. This action will increase the friction between the bushing and swivel, and the screw will thread in or out easily.

F. Muzzle Stabilizer

The muzzle stabilizer is made of steel and fits over the flash suppressor. It is fastened to the bayonet lug of the flash suppressor by means of a screw and lock nut. The holes in the stabilizer are unequal in size and in number, and are arranged in such a manner that the escaping gases are unequal in volume. This causes a reaction in the direction opposite the holes. This reaction is designed to compensate for the forces resulting from recoil and to hold the muzzle relatively stable. The rifle is compensated for right-handed gunners (Photograph 1164).



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RIFLE, 7.62mm, M14E2
Muzzle Stabilizer
Left Side View

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